Development Density

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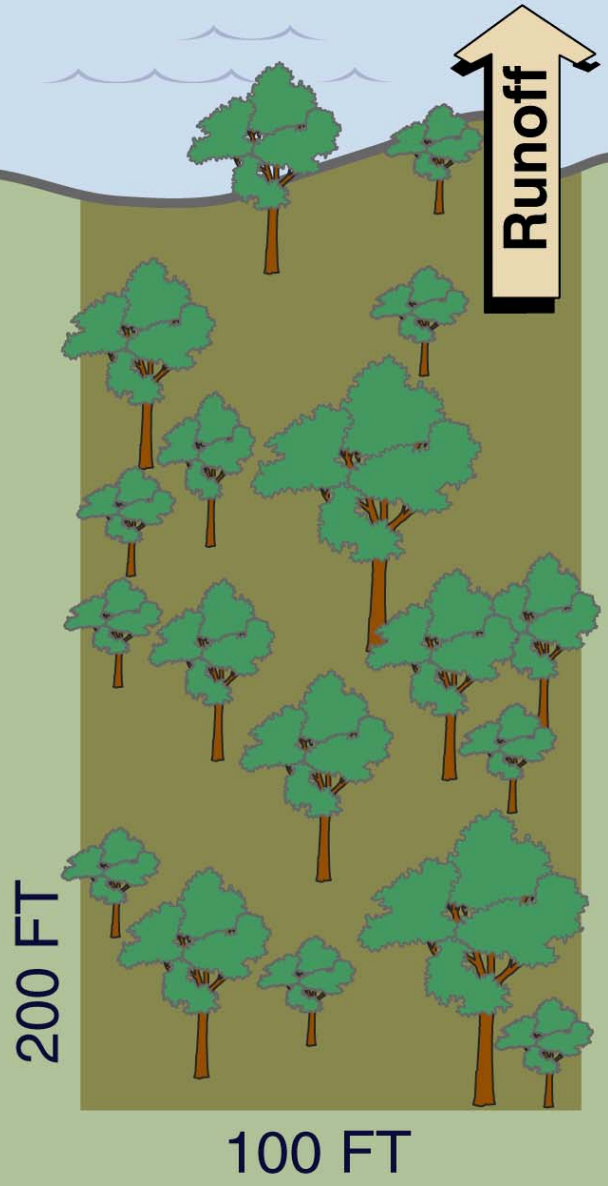
Consequences of Shoreland Development

- Degraded water quality
- Loss of wildlife habitat - near shore and littoral zone
- Degraded natural scenic beauty
- Landscape scale (cumulative impacts)
- Site scale (individual impacts)

Undeveloped Lot: Apr.-Oct. P / sediment runoff model

- maple-beech forest
- 6% slope to lake
- sandy loam soil



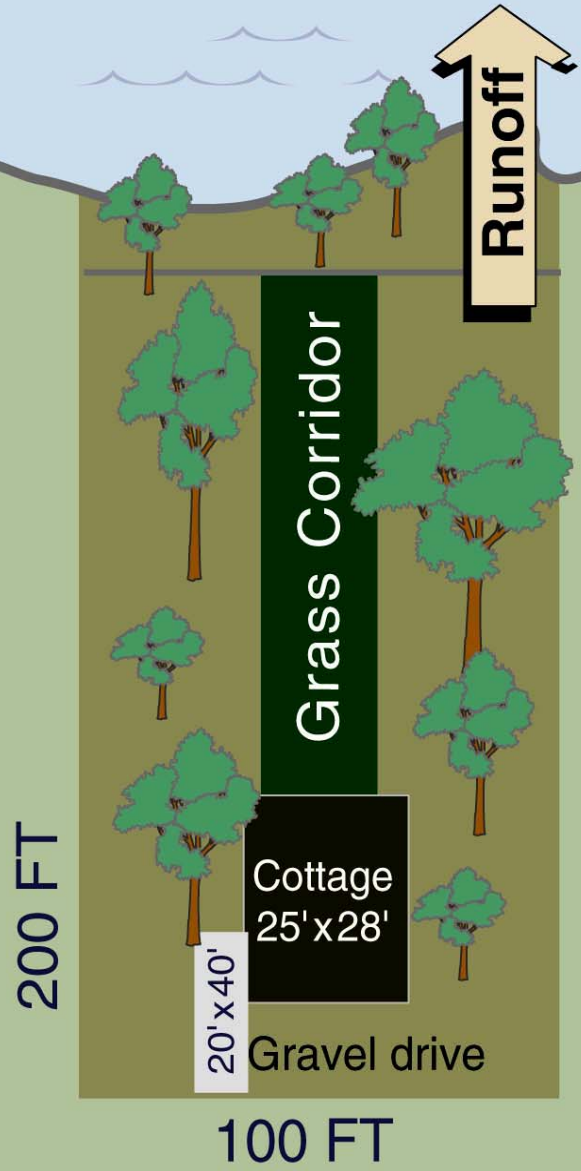
IMPACT ON LAKE
(April - Oct.)

- 1,000 ft^3 runoff to lake
- 0.03 lbs. phos. to lake
- 5 lbs. sediment to lake

Source: Wisconsin Dept. of Natural Resources

1940s-type development: Apr.-Oct. P / sediment runoff model

- maple-beech forest
- 6% slope to lake
- grass corridor 20'-wide
- cottage 700 ft^2 perimeter
- gravel drive 800 ft^2
- 35'-wide buffer strip



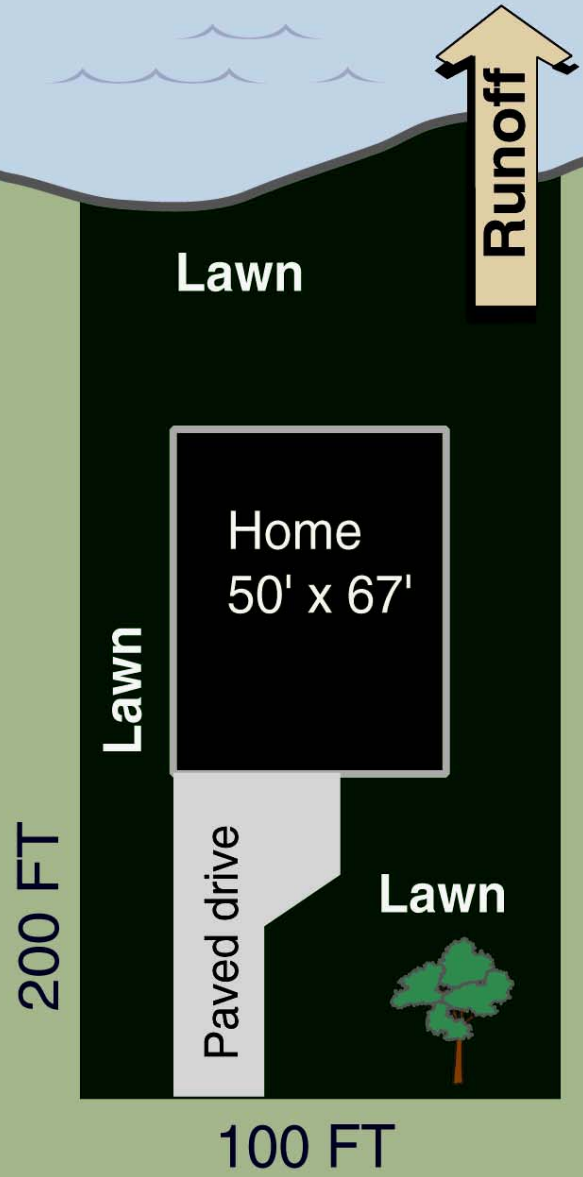
IMPACT ON LAKE
(April - Oct.)

- 1,000 ft^3 runoff to lake
- 0.03 lbs. phos. to lake
- 20 lbs. sediment to lake

Source: Wisconsin Dept. of Natural Resources

1990s-type development: Apr.-Oct. P / sediment runoff model

- maintained lawn, soil graded
- 6% slope to lake
- home 3,350 ft² perimeter
- paved drive 770 ft²

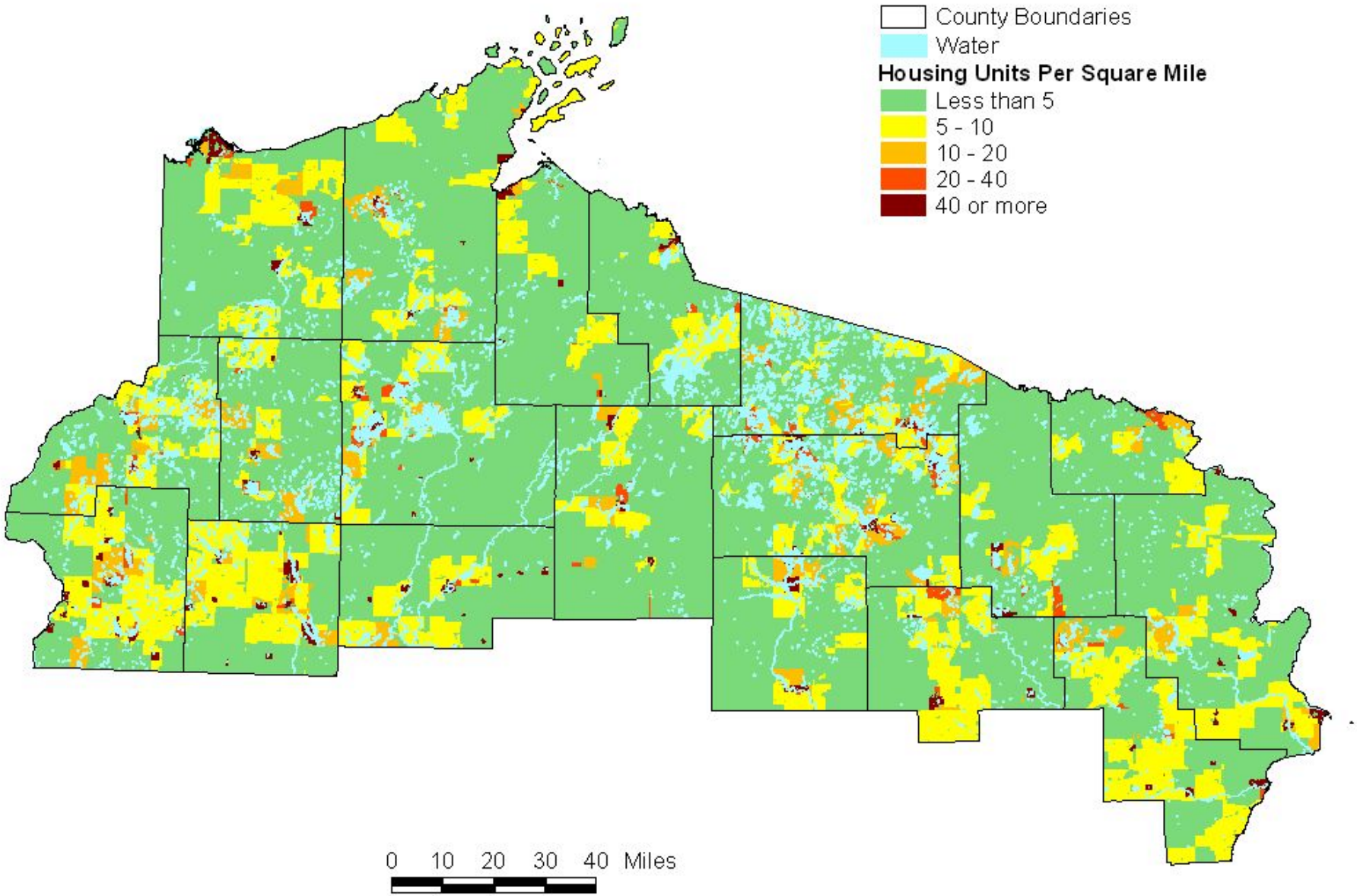


IMPACT ON LAKE
(April - Oct.)

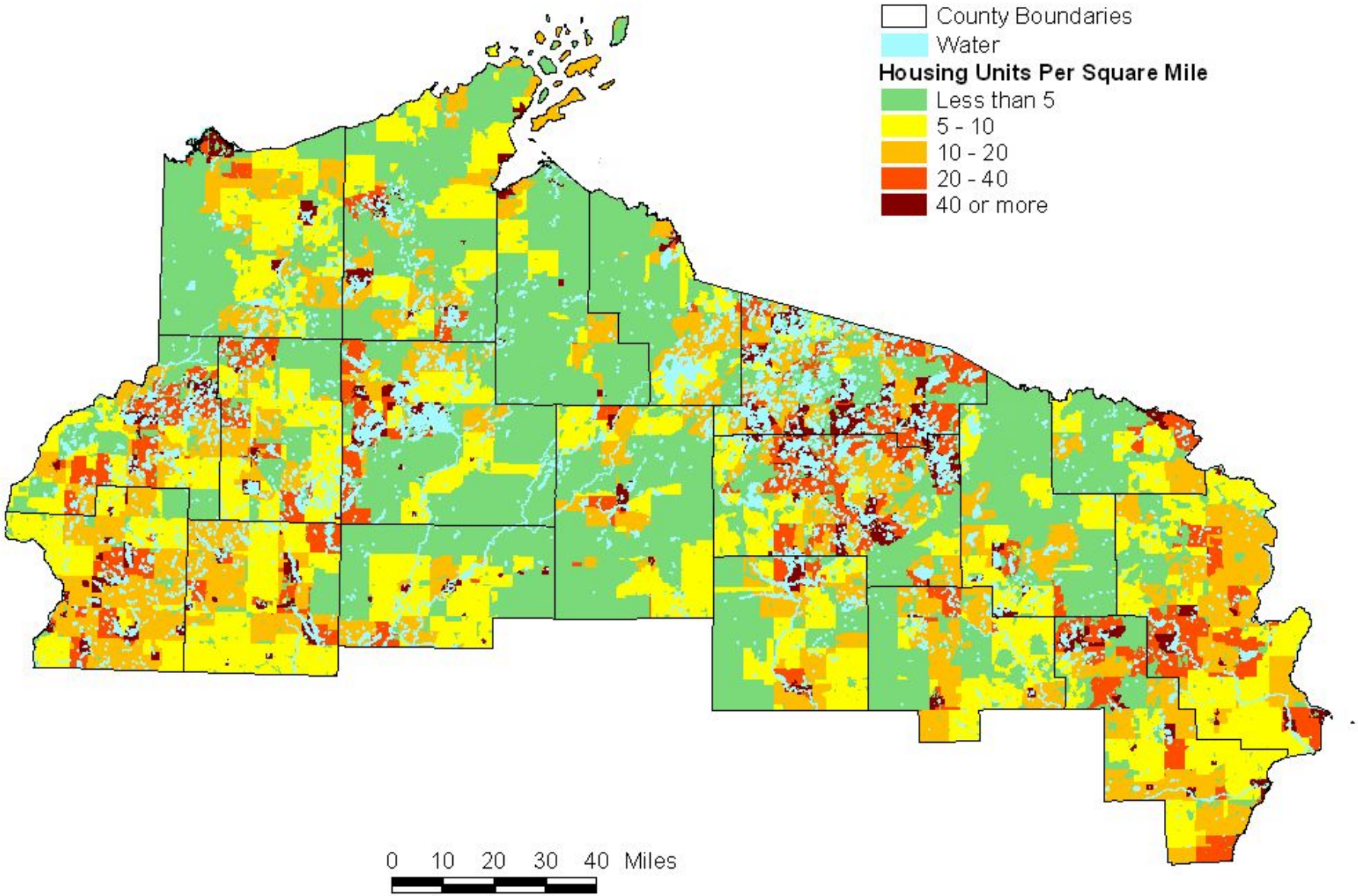
- 5,000 ft³ runoff to lake
- 0.20 lbs. phos. to lake
- 90 lbs. sediment to lake

Source: Wisconsin Dept. of Natural Resources

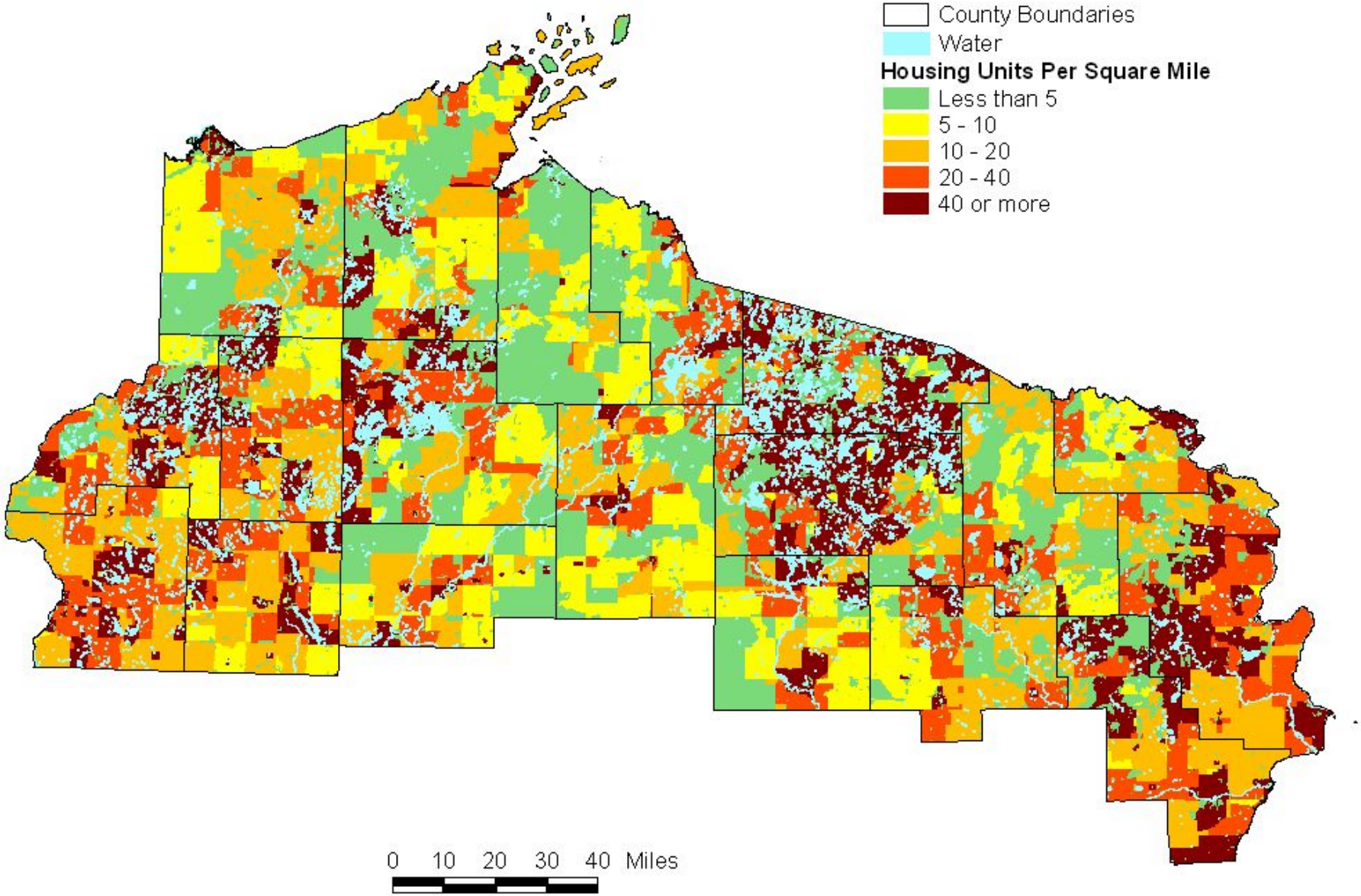
1940 Housing Density by Partial Block Group



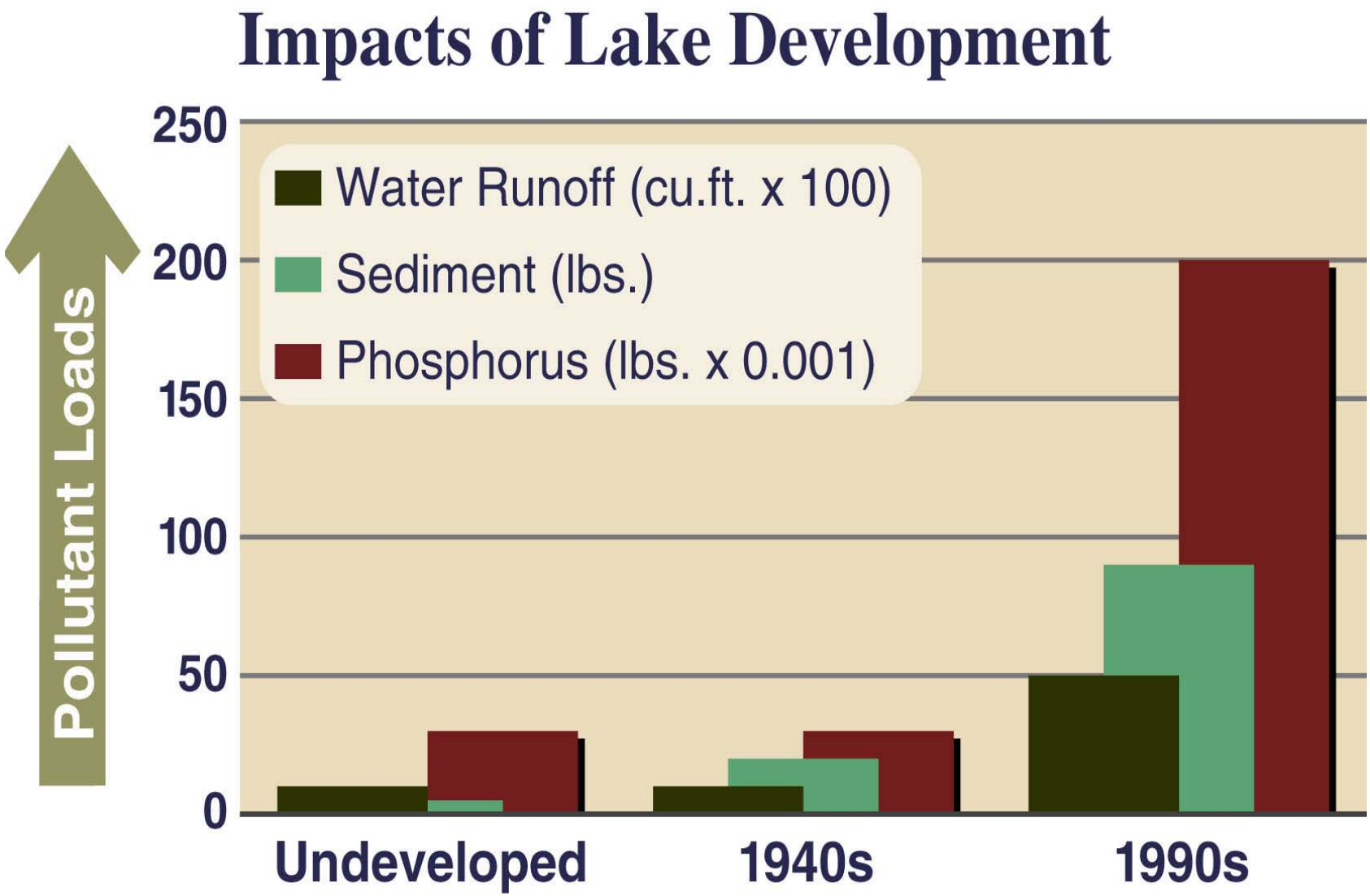
1990 Housing Density by Partial Block Group



2010 Housing Density by Partial Block Group
Rural Renaissance Forecast



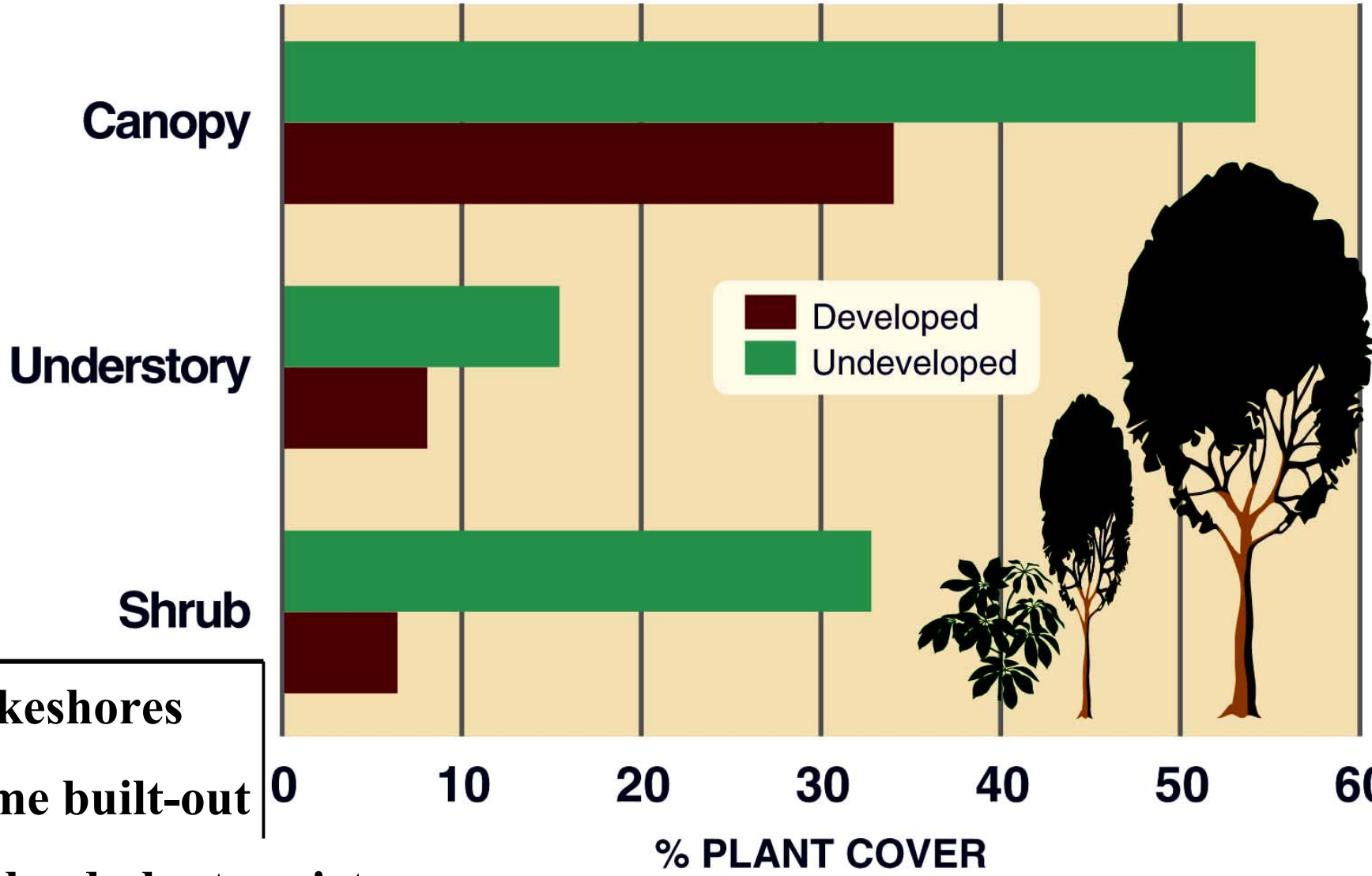
Summary: Apr.-Oct. phosphorus / sediment runoff model



The Wisconsin Lakes Partnership

Source: Wisconsin Dept. of Natural Resources

What has Happened to Shoreland Plants?



As lakeshores become built-out shoreland plant variety decreases, causing serious loss of wildlife habitat.

Natural Scenic Beauty Impacts

- Placement and construction of some structures can interfere with natural scenic beauty
- Loss of native vegetation limits screening
- Surveys and studies demonstrate a general preference for natural scenes over those with human development

Statutory Objectives

Section 281.31, Wisconsin Statutes provides that shoreland subdivision and zoning regulations shall:

- maintain safe and healthful conditions
- prevent and control water pollution
- protect spawning grounds, fish and aquatic life
- control buildings sites, placement of structures and land use
- reserve shore cover and natural beauty

Current NR115 Standards

- Lots served by public sanitary sewer shall have a minimum average width of 65 feet and a minimum area of 10,000 square feet.
- Unsewered lots have an average width of 100 feet and minimum area of 20,000 square feet.

Current Management Alternatives

- Sewered vs. Unsewered?
- Width of Shoreland Lot at the Ordinary High Water Mark (OHWM)
- Minimum square footage for a shoreland lot

Additional Management Alternatives to think about

Impervious Surface Cap

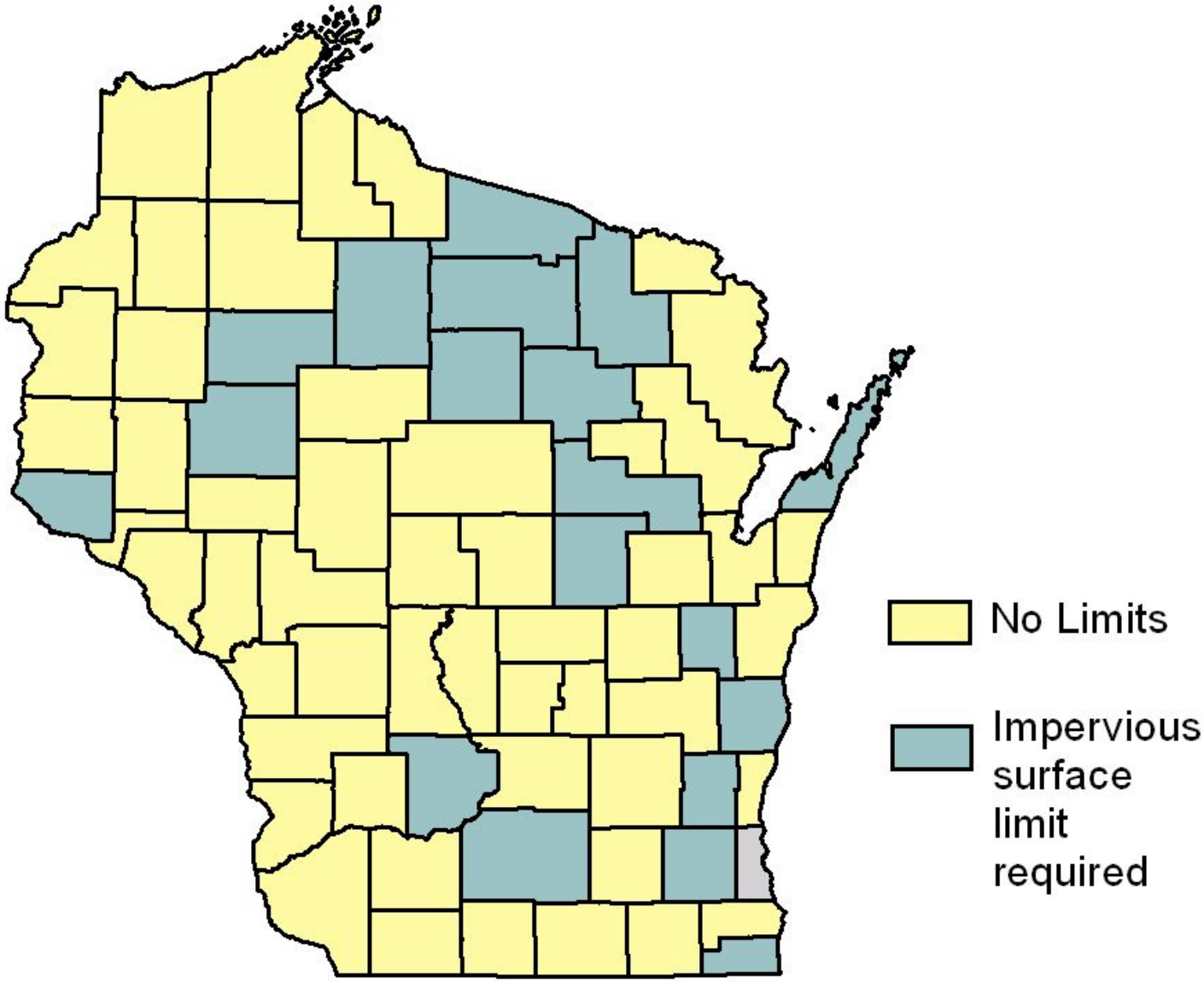
What is an Impervious Surface?

An **Impervious Surface** is any paved, compacted or structural surface which limits or impedes infiltration or causes additional runoff. Such surfaces include, but are not limited to buildings, structures, decks, patios, walkways, driveways and parking areas.

Impervious Surfaces

Photo: Manitowoc Cty. SWCD

Impervious Surface Area Standards



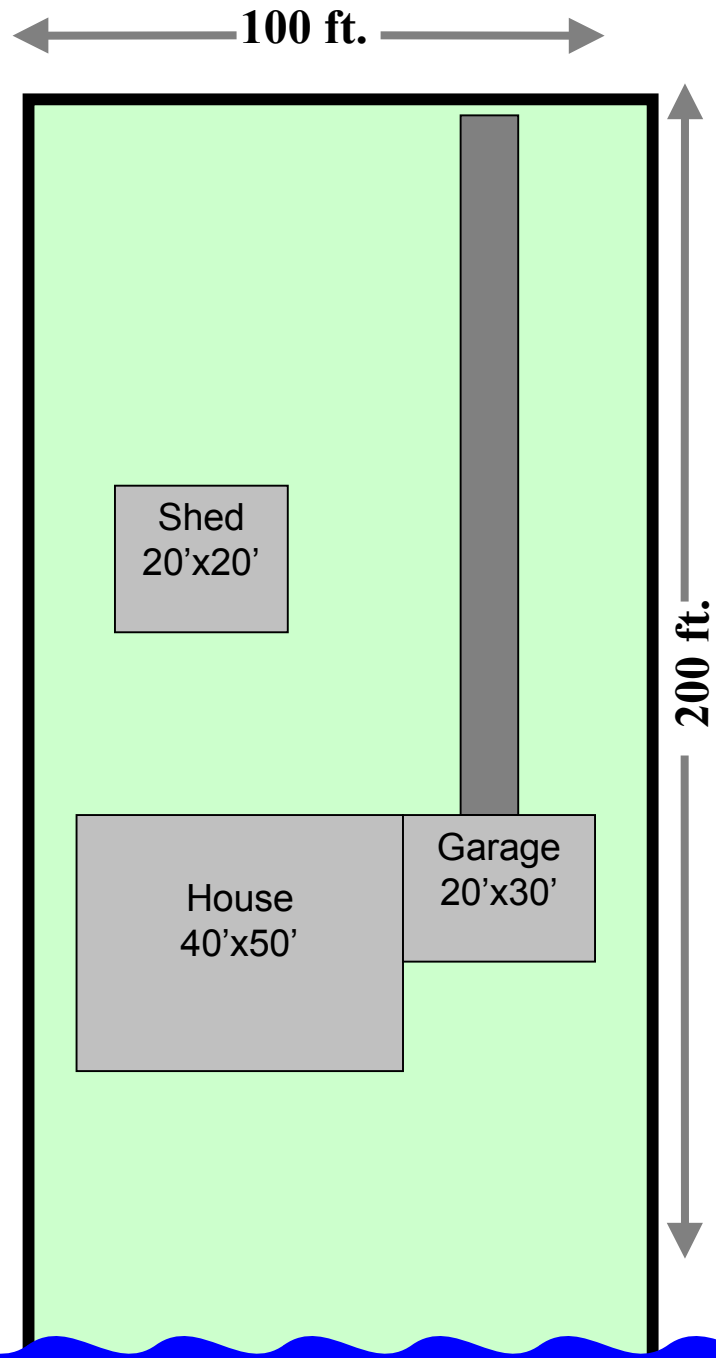
Map = DNR "Creating an Effective Shoreland Zoning Ordinance: Summary of Wisconsin Shoreland Zoning Ordinances", 2000.

Impervious Surfaces Limits

Limited to % of lot area within 200’ of OHWM

For a 20,000 sq. ft. lot
15%= 3000 sq. ft.
20%= 4000 sq. ft.
25%= 5000 sq. ft.
30%= 6000 sq. ft

20% example:
2000 sq. ft. house footprint
600 sq. ft. garage
400 sq. ft. shed
1000 sq. ft. driveway



Additional Management Alternatives to think about

- Lakes Vs. Rivers?

  Currently not differentiated

- Defining Urban Lakes and/or Wild Lakes?

  Currently not Classified or Defined

- Defining Urban Rivers and/or Wild Rivers?

  Currently not Classified or Defined

- Density Parameters for lakes and rivers - high, medium and low

  Currently not differentiated

Mitigation Alternatives Relating to Development Density

- On-Lot Infiltration systems
- On Site Sewage Treatment System

On-Lot Infiltration Systems

On-lot infiltration systems promote infiltration at the individual lot level, controlling runoff at its source. The main feature that distinguishes these systems from other infiltration systems (such as infiltration basins and trenches) is **scale**. These small systems accept runoff from a single residential lot.

What do On-Lot Infiltration Systems do?

- Primary function is to mitigate the normal impacts of urbanization on the natural water balance.
- On-lot infiltration systems promote infiltration at the individual lot level and control runoff at its source.
- Function to improve water quality by removing some pollutants from the runoff as it infiltrates.

Other benefits of On-Lot Infiltration Systems

- Turns water that would normally runoff a property into a resource that waters trees, recharges groundwater and provides stream baseflows.
- Contribute to both erosion and flood control by reducing the volume of runoff from properties.

Advantages

- Can reduce the volume of runoff from a site
- Can be utilized in retrofit areas where space is limited
- Rainwater gardens can provide an aesthetically pleasing amenity
- Can be used at sites where storm sewers are not available
- Can provide groundwater recharge

Limitations

- Only applicable in small drainage areas of a half-acre or less
- Water ponded on lots may take 24 to 48 hours to drain
- Some maintenance is required
- Not recommended for lots with high sediment loadings or contaminated runoff.
- If the infiltration rate of the native soils is low, these systems may not function as desired.

On Site Sewage Systems

- Conventional in-ground systems
- Wisconsin Mound
- At-Grade
- In-ground Pressure Distribution System
- Sand Filter
- Recirculating Sand Filter
- Aerobic Treatment Units
- Constructed Wetlands

On Site Sewage Systems

- All types of systems utilized today and approved by Department of Commerce
- 115 would utilize the upgrading of sewage systems as a mechanism to provide additional flexibility for property owners wanting additions, exemptions, etc.


Comments or Questions
Regarding Development
Density?